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10/722,962

11/26/2003

Uwe B. Sleytr

MAT-0004

9011

33941

7590

06/28/2006

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EXAMINER

NAFF, DAVID M

ART UNIT

PAPER NUMBER

1651

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/722,962

Applicant(s)

SLEYTR ET AL.

Examiner

David M. Naff

Art Unit

1651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/26/04</u> . | 6) <input type="checkbox"/> Other: _____  |

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**DETAILED ACTION**

A preliminary amendment of 11/26/03 amended the specification and claims 4-10, 12-14, 16 and 17.

Claims examined on the merits are 1-17, which are all claims in  
5 the application.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C.  
112:

10 The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph,  
15 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are confusing and unclear by failing to set forth clear, distinct and positive method steps in the order in which they  
20 are performed so the steps have a contiguous relationship and each step and conditions required have clear antecedent basis, and it is clear how each step functions in the method in relation to all other steps. Additionally, in line 2 of claim 1 and where occurring in other claims, using a parenthesis to enclose part of the claim makes  
25 unclear as to whether the part of the claim in parenthesis is patentably limiting. Furthermore, line 1 of claim 1 requires producing a layer of functional molecules on a carrier surface,

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however, there is no step in the method of forming the layer of molecules.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the  
5 basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed  
or described as set forth in section 102 of this title, if the differences between  
the subject matter sought to be patented and the prior art are such that the  
10 subject matter as a whole would have been obvious at the time the invention was  
made to a person having ordinary skill in the art to which said subject matter  
pertains. Patentability shall not be negated by the manner in which the  
invention was made.

15 This application currently names joint inventors. In considering  
patentability of the claims under 35 U.S.C. 103(a), the examiner  
presumes that the subject matter of the various claims was commonly  
owned at the time any inventions covered therein were made absent any  
evidence to the contrary. Applicant is advised of the obligation  
20 under 37 CFR 1.56 to point out the inventor and invention dates of  
each claim that was not commonly owned at the time a later invention  
was made in order for the examiner to consider the applicability of 35  
U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art  
under 35 U.S.C. 103(a).

25 Claims 1-9 and 14-17 are rejected under 35 U.S.C. 103(a) as being  
unpatentable over Sleytr et al (6,296,700 B1) in view of Pum et al (12  
on 1449) and Pum et al (9 on 1449), and if necessary in further view  
of Sleytr et al (11 on 1449) or Kupcu et al (14 on 1449) or Sleytr et  
al (15 on 1449).

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The claims are drawn to a method for the production of a layer of functional molecules on a carrier surface using a surface layer of S-layer proteins as a carrier of the functional molecules. The method involves depositing a solution containing S-layer proteins on a carrier surface, and a two-dimensional crystalline structure is configured in the layer. The S-layer proteins in solution have an electrical charge and an electrochemical potential difference is created between the solution and carrier surface.

Sleytr et al ('700) disclose depositing a crystalline layer of S-layer proteins on a surface of a carrier, and immobilizing functional molecules on the S-layer proteins (paragraph bridging cols 2 and 3).

Pum et al (12) disclose depositing S-layer proteins on a surface for immobilizing functional molecules (paragraph bridging the cols on page 10). The formation of coherent crystalline arrays depends on factors including ionic strength and surface properties of the substrate (page 9, left col).

Pum et al (9) disclose immobilizing functional molecules on recrystallized S-layer proteins (paragraph bridging the cols on page 1687). Due to the proteins having a charge, the proteins orient themselves against a charged phospholipid film (page 1687, left col, lines 14-20).

When depositing a crystalline layer of S-layer proteins on a surface of a carrier as disclosed by Sleytr et al ('700), it would have been obvious to provide an electrochemical potential difference between a solution containing the proteins and the carrier surface as

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suggested by Pum et al (12) disclosing that formation of a crystalline array depends on ionic strength and Pum et al (9) disclosing that the proteins orient themselves against a charged film. Sleytr et al (11), Kupcu et al (14) and Sleytr et al (15) further disclose forming  
5 crystalline layers of S-layer proteins on a surface for immobilizing molecules that are functional, and if needed would have further suggested conditions for forming layers of S-layer proteins. The condition of dependent claims would have obvious from conditions disclosed by the references.

#### 10 *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper  
15 timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated  
20 by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164  
25 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the  
30 conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by  
35 the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-9 and 14-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-

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5 of U.S. Patent No. 6,296,700 B1 in view of Pum et al (12) and Pum et al (9), and if necessary in further view of Sleytr et al (11) or Kupcu et al (14) or Sleytr et al (15).

When producing a crystalline layer of S-layer proteins on a surface for depositing functional molecules as required by the patent claims, it would have been obvious to provide an electrochemical potential difference between a solution containing the proteins and the surface as suggested by Pum et al (12) disclosing that formation of a crystalline array depends on ionic strength and Pum et al (9) disclosing that the proteins orient themselves against a charged film. Sleytr et al (11), Kupcu et al (14) and Sleytr et al (15) further disclose forming crystalline layers of S-layer proteins on a surface for immobilizing molecules that are functional, and if needed would have further suggested conditions for forming layers of S-layer proteins. The condition of dependent claims would have obvious from conditions disclosed by the references.

#### **Conclusion**

Claims 10-13 are free of the prior art.

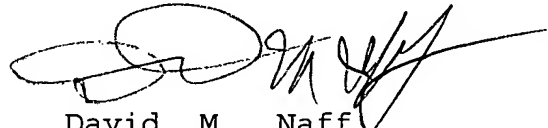
Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Naff whose telephone number is 571-272-0920. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on 571-272-

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0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David M. Naff  
Primary Examiner  
Art Unit 1651

DMN

15 6/26/06